



DECLARATION

I, NOBUAKI KATO, a Japanese Patent Attorney registered No. 8517, of Okabe International Patent Office at No. 602, Fuji Bldg., 2-3, Marunouchi 3-chome, Chiyoda-ku, Tokyo, Japan, hereby declare that I have a thorough knowledge of Japanese and English languages, and that the attached pages contain a correct translation into English of the priority documents of Japanese Patent Application No. 2000-018337 filed on January 27, 2000 in the name of CANON KABUSHIKI KAISHA.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made, are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed this 28th day of July, 2006

A handwritten signature in black ink, appearing to read "Nobuaki Kato", written over a horizontal line.

NOBUAKI KATO



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This is to certify that the annexed is a true copy
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Control Apparatus And Storage Medium
Thereof

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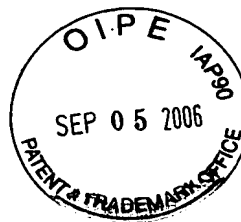
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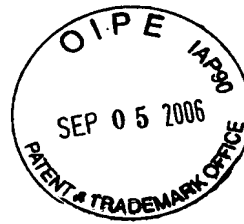
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[Document Title] SPECIFICATION

2000-018337

[Title of the Invention]

IMAGE INPUT/OUTPUT CONTROL APPARATUS, CONTROL METHOD
OF IMAGE INPUT/OUTPUT CONTROL APPARATUS AND STORAGE
5 MEDIUM THEREOF

[Claims]

1. An image input/output control apparatus which
controls input/output of an image of an image formation
10 system in which an image input device and plural image
output devices are mutually communicated through a
predetermined communication medium, said image
input/output control apparatus comprising:

interactive operation setting means for setting an
15 image formation function including output media by using
a display apparatus and the input apparatus;

cascade image output means for outputting an image
to the plural image output devices through the
communication medium so that the image read by said image
20 input device is subjected to image formation by the image
formation function set by said operation setting means;

cascade image output device selection means for
selecting the image output device being the output target
of said cascade image output means, from said plural
25 image output devices; and

control means for display controlling on said display
apparatus whether or not the plural image output devices

selected by said cascade image output device selection means hold the output media of the same size.

2. An image input/output control apparatus
5 according to Claim 1, wherein said control means invalidates the selection by said cascade image output device selection means, if the plural image output devices selected by said cascade image output device selection means does not hold the output media of the same size.

10

3. An image input/output control apparatus
according to Claim 1, wherein said control means displays a warning message on said display apparatus and invalidates the selection by said cascade image output device selection
15 means, if the plural image output devices selected by said cascade image output device selection means does not hold the output media of the same size.

4. An image input/output control apparatus
20 according to Claim 1, wherein said control means display controls on said display apparatus whether or not the plural image output devices selected by said cascade image output device selection means hold the output media of the same size and the same kind.

25

5. An image input/output control apparatus
according to Claim 4, wherein said control means

invalidates the selection by said cascade image output device selection means, if the plural image output devices selected by said cascade image output device selection means does not hold the output media of the same size
5 and the same kind.

6. An image input/output control apparatus according to Claim 4, wherein said control means displays a warning message on said display apparatus and invalidates
10 the selection by said cascade image output device selection means, if the plural image output devices selected by said cascade image output device selection means does not hold the output media of the same size and the same kind.

15

7. A control method for an image input/output control apparatus which controls input/output of an image of an image formation system in which an image input device and plural image output devices are mutually communicated
20 through a predetermined communication medium, said method comprising:

a cascade image output device selection step of selecting the image output device being the output target of cascade image output of outputting an image read by
25 said image input device to the plural image output devices through the communication medium; and

a display step of displaying whether or not the

selected plural image output devices have a same output media, on a setting unit for setting an image formation function.

5 8. A control method according to Claim 7, wherein the same output media are the output media of the same size and the same kind.

 9. A storage medium which computer-readably stores
10 a program for causing to execute:

 a cascade image output device selection step of selecting an image output device being the output target of cascade image output of outputting an image read by an image input device to plural image output devices
15 through a communication medium, in an image input/output control apparatus which controls input/output of an image of an image formation system in which the image input device and the plural image output devices are mutually communicated through the predetermined communication
20 medium; and

 a display step of displaying whether or not the selected plural image output devices have a same output media, on a setting unit for setting an image formation function.

25

 10. A storage medium according to Claim 9, wherein the same output media are the output media of the same

size and the same kind.

[Detailed Description of the Invention]

[0001]

5 [Field of the Industrial Application]

The present invention relates to an image
input/output control apparatus which controls image
input/output of an image formation system in which an
image input device and plural image output devices are
10 mutually connected through a predetermined communication
media, a control method of the image output control
apparatus and a storage medium thereof.

[0002]

[Prior Art]

15 Conventionally, an image formation system in which
an image input device and plural image output devices
are mutually connected through a transmission medium
such as a network or the like has been proposed. In
particular, the image formation system called a cascade
20 in which the single image input device and the plural
image output devices are connected through the
transmission medium is known.

[0003]

In a case where unspecified number of image output
25 devices connected to the transmission medium such as
a network or the like are the output candidates of the
cascade operation, the means for selecting the image

output device being the output target of the cascade operation is necessary. Here, since the image output modes of enabling to output an image by the selected image output device are different from others, a problem
5 that the selection of the image output device and the operation setting of the image output mode become difficult occurs.

[0004]

To solve the above problem, for example, image output
10 device priority setting for first causing to select the image output device being the output target of the cascade operation, next enabling to set only the image output mode capable of commonly outputting the image by the selected image output device, and causing to execute
15 the selection of the plural image output devices and the operation setting of the image output mode by setting the image output mode, image output mode priority setting for first causing to select the image output mode, next enabling to select only the image output device capable
20 of outputting the image in the set image output mode, and causing to execute the selection of the plural image output devices and the operation setting of the image output mode by selecting the image output device, and the like are proposed.

25 [0005]

[Problem to be solved by the Invention]

However, in the image output device priority setting,

if there is no output media of the same size or the same kind in the image output devices being the output target of the cascade operation, it implies that there is no output media capable of being set when setting the image
5 output mode, whereby image output becomes impossible.
[0006]

The present invention has been completed to solve the above problem, and the object of the first to tenth inventions is to provide the image input/output control
10 apparatus which selects the image output device being the output target of the cascade image output of outputting the image read by the image input device to the plural image output devices through the transmission medium, controls the display on the operation unit for setting
15 the image formation function of determining whether the selected plural image output devices have the same output media, and thus improves the operability by preventing wasteful setting operation that an operator again sets, after setting the various image formation functions,
20 the various image formation functions only after recognizing the selection of the output media is impossible, the control method of the image input/output control apparatus, and the storage medium of the control method.
[0007]

25 [Means and Operations for Solving the Problem]

According to the first invention, there is provided an image input/output control apparatus (controller unit

2000) which controls input/output of an image of an image formation system in which an image input device (scanner unit 2070 shown in Fig. 1) and plural image output devices (printer unit 2095, printer unit 2295, printer unit 2395 shown in Fig. 1) are mutually communicated through a predetermined communication medium, the image input/output control apparatus comprising:

interactive operation setting means (operation unit 2012 shown in Fig. 1) for setting an image formation function including output media by using a display apparatus (LCD 2013 shown in Fig. 4) and the input apparatus (touch panel 2019 shown in Fig. 4);

cascade image output means (CPU 2001 shown in Fig. 2 executes cascade image output control based on programs stored in ROM 2003, HDD 2004 or not-shown another storage medium) for outputting an image to the plural image output devices through the communication medium so that the image read by the image input device is subjected to image formation by the image formation function set by the operation setting means;

cascade image output device selection means (selectable image output device list 3201 shown in Fig. 9) for selecting the image output device being the output target of the cascade image output means, from the plural image output devices; and

control means (CPU 2001 shown in Fig. 2 executes cascade display control based on programs stored in ROM

2003, HDD 2004 or not-shown another storage medium) for
display controlling on the display apparatus whether
or not the plural image output devices selected by the
cascade image output device selection means hold the
5 output media of the same size.

[0008]

According to the second invention, the control means
invalidates the selection by the cascade image output
device selection means, if the plural image output devices
10 selected by the cascade image output device selection
means does not hold the output media of the same size.

[0009]

According to the third invention, the control means
displays a warning message (warning message 3502 in warning
15 window 3501 shown in Fig. 12) on the display apparatus
and invalidates the selection by the cascade image output
device selection means, if the plural image output devices
selected by the cascade image output device selection
means does not hold the output media of the same size.

20 [0010]

According to the fourth invention, the control means
display controls on the display apparatus whether or
not the plural image output devices selected by the cascade
image output device selection means hold the output media
25 of the same size and the same kind.

[0011]

According to the fifth invention, the control means

invalidates the selection by the cascade image output device selection means, if the plural image output devices selected by the cascade image output device selection means does not hold the output media of the same size
5 and the same kind.

[0012]

According to the sixth invention, the control means displays a warning message on the display apparatus and invalidates the selection by the cascade image output
10 device selection means, if the plural image output devices selected by the cascade image output device selection means does not hold the output media of the same size and the same kind.

[0013]

15 According to the seventh invention, there is provided a control method for an image input/output control apparatus which controls input/output of an image of an image formation system in which an image input device and plural image output devices are mutually communicated
20 through a predetermined communication medium, the method comprising:

a cascade image output device selection step (step S204 shown in Fig. 13) of selecting the image output device being the output target of cascade image output
25 of outputting an image read by the image input device to the plural image output devices through the communication medium; and

a display step (steps S214 to S216 shown in Fig. 15) of displaying whether or not the selected plural image output devices have a same output media, on a setting unit for setting an image formation function.

5 [0014]

According to the eighth invention, the same output media are the output media of the same size and the same kind.

[0015]

10 According to the ninth invention, there is provided a storage medium which computer-readably stores a program for causing to execute:

a cascade image output device selection step (step S204 shown in Fig. 13) of selecting an image output device
15 being the output target of cascade image output of outputting an image read by an image input device to plural image output devices through a communication medium, in an image input/output control apparatus which controls input/output of an image of an image formation system
20 in which the image input device and the plural image output devices are mutually communicated through the predetermined communication medium; and

a display step (steps S214 to S216 shown in Fig. 15) of displaying whether or not the selected plural
25 image output devices have a same output media, on a setting unit for setting an image formation function.

[0016]

According to the tenth invention, the same output media are the output media of the same size and the same kind.

[0017]

5 [Embodiments]

(First Embodiment)

Hereinafter, the embodiment (directed to a device control method of an image formation system in which an image input device and plural image output devices
10 are mutually connected through a transmission medium such as a network or the like, and, more particularly, directed to an operation setting method in case of simultaneously outputting the image read by the single image input device to the plural image output devices)
15 of the present invention will be explained in detail with reference to the accompanying drawings.

[0018]

Fig. 1 is a block diagram for explaining an entire structure of an image formation system to which image
20 input/output control apparatuses indicating a first embodiment of the present invention can be adopted.

[0019]

In Fig. 1, numeral 200 denotes an image formation device which is composed of a scanner unit 2070 being
25 an image input device, a printer unit 2095 being an image output device, a controller unit 2000 for totally controlling an entire of the image formation device 200

and an operation unit 2012 being a user interface.

[0020]

The scanner unit 2070, the printer unit 2095 and the operation unit 2012 are respectively connected to
5 the controller unit 2000, which is connected to a network communication means such as a LAN (Local Area Network) 2011 (e.g., Ethernet) or the like.

[0021]

Other image formation devices 220 and 230 which have
10 the same structure as that of the image formation device 200 are connected to the LAN 2011.

[0022]

Similar to the image formation device 200, the image formation device 220 is composed of a scanner unit 2270
15 being the image input device, a printer unit 2295 being the image output device, a controller unit 2200 for totally controlling an entire of the image formation device 220 and an operation unit 2212 being the user interface. The scanner unit 2270, the printer unit 2295 and the
20 operation unit 2212 are respectively connected to the controller unit 2200.

[0023]

Similarly, the image formation device 230 is composed of a scanner unit 2370 being the image input device,
25 a printer unit 2395 being the image output device, a controller unit 2300 for totally controlling an entire of the image formation device 230 and an operation unit

2312 being the user interface. The scanner unit 2370, the printer unit 2395 and the operation unit 2312 are respectively connected to the controller unit 2300.

[0024]

5 Hereinafter, the structure of the image formation system to which the image input/output control apparatus can be adopted will be explained with reference to the image formation device 200. The image output devices 200, 220 and 230 may be the image output devices having
10 identical image output functions (media size for images which can be outputted, the kind of media for images which can be outputted, sorting function, two-sided copying function and the like) each other or may be the image output devices having different image output
15 functions each other.

[0025]

Fig. 2 is a block diagram for explaining the structure of the image formation device 200 shown in Fig. 1. In Fig. 2, the same parts as those in Fig. 1 are added with
20 the same numerals respectively.

[0026]

As shown in Fig. 2, the controller unit 2000 is connected to the scanner unit 2070 and the printer unit 2095. While, the controller unit 2000 is also connected
25 to the LAN 2011 and a public line (WAN : Wide Area Network) 2051, thereby performing an input/output operation of image information and device information.

[0027]

In the controller unit 2000, numeral 2001 denotes a CPU which entirely controls the system on the basis of programs stored in a ROM (Read Only Memory) 2003, a hard disk drive (HDD) 2004 or another storage medium (not shown). Numeral 2002 denotes a RAM (Random Access Memory) which acts as a system work memory for an operation of the CPU 2001 and also acts as an image memory for temporarily storing image data. The ROM 2003 is a boot ROM which stores a boot program or the like of the system. The HDD 2004 stores system software, image data and the like.

[0028]

The operation unit 2012 is the user interface unit (UI) for performing various settings of the image formation device 200. Numeral 2006 denotes an operation unit interface (I/F) which controls various input/output operations of the operation unit 2012 by outputting image data to be displayed on the operation unit 2012 to the operation unit 2012 and notifying information inputted by a user of the present system using the operation unit 2012 to the CPU 2001.

[0029]

Numeral 2010 denotes a network interface (Network I/F) which is connected to the LAN 2011 and performs an input/output operation of information through the LAN 2011. The CPU 2001 can obtain information regarding

the size or kind of output paper (output device) of the each image output device (printer unit 2295, 2395, etc.) and the like stored in the each image output device located on the LAN 2011 through the network interface 2010.

5 [0030]

Numeral 2050 denotes a Modem which is connected to the public line 2051 and performs an input/output operation of information through the public line 2051. The above-described devices are located on a system bus 2007.

10 [0031]

Numeral 2005 denotes an image bus interface (Image Bus I/F) which is used for connecting the system bus 2007 to an image bus 2008 for transferring image data at a high speed, and acts as a bus bridge for converting the data structure. The image bus 2008 is structured by a PCI (Peripheral Component Interconnected) bus or an IEEE 1394. On the image bus 2008, the following devices are located.

[0032]

20 Numerals 2060 and 2070 denote a raster image processor (RIP) which develops a page description language (PDL) code to a bitmap image. Numerals 2020 and 2030 denote a device interface (device I/F) unit which connects the scanner unit 2070 or the printer unit 2095 to the controller unit 2000, performs a sync system/non-sync system conversion of the image data, and inputs raster image data of an interface 2071 from the scanner unit 2070 and outputs raster image

25

data of an interface 2096 to the printer unit 2095.

[0033]

Numeral 2080 denotes a scanner image processing unit which executes correcting, forming and editing processes to input image data. Numeral 2090 denotes a printer image processing unit which performs a printer correction, a resolution conversion or the like to print output image data.

[0034]

10 Numeral 2030 denotes an image rotation unit which rotates the image data. Numeral 2040 denotes an image compression unit which performs compression/expansion processing such as a JPEG (Joint Photographic experts Group) system for multi value image data and the JPIG
15 (Joint Bi-level Image experts Group) system, an MMR (Modified Modified READ) encoding, an MH (Modified Huffman) encoding or the like for binary image data.

[0035]

Hereinafter, the scanner unit 2070 being the image
20 input device and the printer unit 2095 being the image output device shown in Fig. 1 will be explained with reference to Fig. 3.

[0036]

Fig. 3 is a view showing an external appearance of
25 the image formation device 200 including the scanner unit 2070 and the printer unit 2095 shown in Fig. 1. In Fig. 3, the same parts as those in Fig. 1 are added

with the same numerals respectively.

[0037]

In Fig. 3, numeral 2072 denotes an original feeder which feeds original sheets (or original papers) set
5 in a tray 2073 one by one when originals are read.

[0038]

The printer unit 2095 has plural sheet feed stages (here, stages one to three) such that different paper size or different paper direction can be selected and
10 has corresponding sheet cassettes 2101 and 2102 and sheet deck 2103. Numeral 2111 denotes a sheet discharge tray which receives the printed paper.

[0039]

Hereinafter, an operation in each part will be
15 explained.

[0040]

The scanner unit 2070 being the image input device irradiates an image on a sheet being an original and converts the read image data to an electric signal as
20 the raster image data of the interface 2071 (Fig. 2) by scanning the image on the original using a CCD line sensor.

[0041]

The original sheets are set in the tray 2073 provided
25 on the original feeder 2072 which feeds the original sheets one by one, and an operation of reading original images is started upon giving a read start instruction

from the CPU 2001 to the scanner unit 2070 (2071) by giving the read start instruction through the operation unit 2012 from the user of the device.

[0042]

5 The printer unit being the image output device is a portion where the raster image data of the interface 2096 is converted to an image on the sheet, and a method thereof may be any of an electrophotographic system using a photosensitive drum or a photosensitive belt, an inkjet
10 system for directly printing an image on a sheet by discharging ink from a microscopic nozzle array, a thermal transfer system, a sublimation system and the like.

[0043]

Starting of a printing operation is initiated by
15 an instruction of the interface 2096 from the CPU 2001.

[0044]

Hereinafter, the structure of the operation unit 2012 shown in Fig. 1 will be explained with reference to Fig. 4.

20 [0045]

Fig. 4 is a plane view for explaining the structure of the operation unit 2012 shown in Fig. 1.

[0046]

In Fig. 4, numeral 2013 denotes an LCD (Liquid Crystal
25 Display) unit on which a touch panel sheet 2019 is pasted.

This structured LCD unit displays an operation screen of the system and software keys and notifies position

information to the CPU 2001 being a controller when the key being displayed on the LCD is depressed or touched.

[0047]

Numeral 2014 denotes a start key which is depressed
5 when an original image reading operation is to be started.

Numeral 2018 denotes an LED for emitting two colors of green and red, and it is provided on a central position of the start key 2014 to indicate whether or not the start key 2014 is in a usable state according to those
10 two colors.

[0048]

Numeral 2015 denotes a stop key which is depressed when a running operation is to be stopped. Numeral 2016 denotes an ID (identity) key which is used when a user
15 ID for a user is to be inputted. Numeral 2017 denotes a reset key which is depressed when the setting instructed from the operation unit is to be initialized. Symbol 2016TK denotes ten keys which are used when the number of copies or the like is to be inputted.

20 [0049]

Hereinafter, the structure of the operation unit of the image formation system to which the image input/output control apparatus indicating embodiments of the present invention can be adopted will be explained
25 with reference to Fig. 5.

[0050]

Fig. 5 is a block diagram for explaining the structure

of the operation unit of the image formation system to which the image input/output control apparatus indicating the embodiments of the present invention can be adopted.
[0051]

5 In Fig. 5, the CPU 2001 totally controls an accessing operation with various devices connected to the system bus 2007 (Fig. 2) on the basis of control programs or the like stored in the program ROM 2003, the HDD 2004 or another storage medium (not shown), reads input
10 information from the scanner unit 2070 connected through the image input unit interface 2071 (Fig. 2) and outputs an image signal being output information to the printer unit 2095 connected through the printer unit interface 2096.

15 [0052]

 In the program ROM 2003, the control programs as shown in a task structural view in Fig. 6 described later and flow charts in Figs. 7 and 8 are stored. The RAM 2002 functions as a main memory, a work area or the like
20 of the CPU 2001.

[0053]

 The CPU 2001 obtains operation content through an input port 20061 by receiving information inputted by the user using the touch panel 2019 and hard keys 2014
25 to 2017 and generates display screen data on the basis of the obtained operation content and the above-described control programs to output that data to an output port

20062.

[0054]

The output port 20062 being an output device controller for controlling a screen output device outputs
5 a displaying screen to the screen output device such as the LCD unit 2013, a CRT (not shown) or the like on the basis of the display screen data inputted from the CPU 2001, and controls an on/off blinking of the LED 2018 on the basis of LED on/off blinking data inputted
10 from the CPU 2001.

[0055]

Fig. 6 is a task structural view of an operation display system showing one example of the software structure regarding an operation display of the image
15 formation system to which the image input/output control apparatus indicating one embodiment of the present invention can be adopted.

[0056]

In a part of the program ROM 2003 shown in Fig. 2,
20 a task scheduling program called as a real-time OS (Operating System) is stored. Each task indicated in the task structural view of the operation display system shown in Fig. 6 is also controlled under the management of this real-time OS.

25 [0057]

Numerical 2201 denotes a key input task which is started by an interrupt depending on a touch panel operation

and a hard key operation performed by the operator, and processing of waiting a restart is repeated by plugging a key input event in an operation unit event queue 2205. [0058]

5 Numeral 2205 denotes the operation unit event queue which has FIFO (First-In, First-Out) structure of collectively receiving events from plural tasks. Numeral 2202 denotes an interval timer task which repeats processing of plugging a timer event in the operation
10 unit event queue 2205 every interval of a predetermined time. Numeral 2203 denotes a task related to a control of the controller (controller control task group) which is not a task of the operation display system. However, the task 2203 has an interface of plugging a main body
15 status event indicating a status of an equipment in the operation unit event queue 2205 or receiving a drive command of the equipment between the tasks of the operation display system (the key input task 2201 and the interval timer task 2202).

20 [0059]

 Numeral 2204 denotes an operation unit application task which captures various events plugged in the operation unit event queue 2205, executes processing corresponding to each of the events and repeats the processing until
25 the operation unit events are all discharged. If the events are all discharged, a state of waiting the events is settled. As the processing corresponding to the events,

drawing an image on the LCD unit 2013, lighting the LED 2018 and transmitting the command to the controller control task group 2203 are main processing.

[0060]

5 Hereinafter, processing of the operation unit application task 2204 shown in Fig. 6 will be explained with reference to a flow chart in Fig. 7.

[0061]

Fig. 7 is a flow chart showing one example of first
10 control processing executed in the image formation system to which the image input/output control apparatus of the present invention can be adopted. The CPU 2001 executes the first control processing on the basis of the program stored in the ROM 2003 or another storage
15 medium (not shown) corresponding to one example of processing of the operation unit application task 2204 shown in Fig. 6. Reference symbols S101 to S105 respectively indicate steps.

[0062]

20 At first, in the step S101, initializing processing of the task and various initializing processes to be once executed when the system is started are executed.

[0063]

Next, in the step S102, it is investigated whether
25 or not the event exists in the operation unit event queue 2205. When it is judged that the event does not exist, the processing executed in the step S102 is repeated.

[0064]

On the other hand, in the step S102, when it is judged that the event exists in the operation unit event queue 2205, a window to be used for notifying the event is
5 judged on the basis of the event content captured from the operation unit event queue 2205 in the step S103.

[0065]

When the window to be used for notifying the event is judged, in the step S104, a control is given to a
10 callback function (perform function call to callback function) previously registered in the judged window.

Then, the flow advances to the step S105.

[0066]

Processing in the step S105 is executed within a
15 category of the callback function, and various content of the processing can be set according to the kind of windows. However, as general processing to be executed, processing of creating a new window, drawing a screen, transmitting a command, on/off blinking the LED or the
20 like is executed.

[0067]

In the following, the screen changing in the operation screen of the image formation device according to the present invention will be described using a screen
25 displayed on the LCD unit 2013 shown in Fig. 4 with reference to Figs. 8 to 12.

[0068]

Fig. 8 is a view showing the operation setting screen of the image output device to which the image input/output control apparatus of the present invention can be adopted, and this screen corresponds to an initial screen and
5 a standard screen of returning to standard state after setting various image formation functions and is displayed on the LCD unit 2013 in the operation unit 2012 shown in Fig. 4.

[0069]

10 In Fig. 8, numeral 3101 denotes a direct (same-sized copying) key which is a software key used for setting a same size output without using a zoom function in an image formation. Numeral 3102 denotes a zoom key which is a software key used for setting the zoom function.

15 [0070]

Numeral 3103 denotes a sheet select (or paper select) key which is a software key used for setting the output paper. For example, the sheet select key 3103 can be used to set sheet sizes A4, A3, B4, B5, LTR (letter size)
20 and the like. By depressing or touching this key, only the output media (size) capable of being commonly outputted by the image output device selected by a select output device key 3104 is displayed and only the output media (size) capable of being commonly outputted is enabled
25 to be set.

[0071]

Numeral 3106 denotes a two-sided copy key which is

a software key used for setting the two-sided copying.

Numeral 3107 denotes a finishing key which is a software key used for setting sorting of the output paper. Numeral 3109 denotes a special feature key which is a software
5 key used for setting other practical functions.

[0072]

After depressing or touching these keys of the zoom key 3102, the sheet selection key 3103, the select output device key 3104, the two-sided copy key 3106, the finishing
10 key 3107 and the special feature key 3109, the display screen is changed to a screen used for setting more detailed functions.

[0073]

Numeral 3108 denotes a density setting key which
15 is a software key group used for setting image output density. Numeral 3105 denotes a display area where setting status of the image output device selection is displayed.

[0074]

The image output device of the present invention
20 can perform an output operation to a remote image formation device connected through the LAN (called remote copying) or perform the cascade copying. However, as an initial status, it is set to perform the image output operation to the own device (called local copying). The setting
25 status of the image output device selection of performing the local copying, the remote copying or the cascade copying is displayed on the display area 3105.

[0075]

Fig. 9 is a view showing the operation setting screen (output device selection window) of the image formation system to which the image input/output control apparatus
5 of the present invention can be adopted. This screen corresponds to a setting screen displayed after depressing or touching the select output device key 3104 shown in Fig. 8 and is used for selecting the image output device.

This screen is displayed on the LCD unit 2013 in the
10 operation unit 2012 shown in Fig. 4.

[0076]

In Fig. 9, numeral 3201 denotes a selectable image output device list, where names of the selectable image output devices, small appearance icons, status, output
15 specification and the like are displayed as a list. The image output devices displayed as the list are separately registered (registering method will not be described.

[0077]

In the selectable image output devices list 3201,
20 the output device can be directly selected by an operation of a touch panel input. The name of the selected image output device is reversely displayed. Status shown in Fig. 9 is a default status in which a local image output device displayed on the uppermost position in the list
25 is selected and is reversely displayed.

[0078]

Numeral 3204 denotes a cascade key. By depressing

or touching this key, the two image output devices in the list can be selected as the output devices for the cascade copying, and check marks are displayed on a left-edge field of the names of the selected image output
5 devices (refer to Fig. 10 to be described later).

[0079]

Numeral 3203 denotes a details key which is a software key used for referring a detailed specification of the image output device of which name is selected and reversely
10 displayed. By depressing or touching this software key, the screen is changed to another screen, where the detailed specification of the image output device is displayed.

[0080]

Numeral 3202 denotes a scroll key which is a software
15 key used for page scrolling the selectable image output device list. Numeral 3205 denotes a done key which is a software key used for defining the selection of the image output device.

[0081]

20 Fig. 10 is a view showing an operation setting screen (output device selection window) of the image formation system to which the image input/output control apparatus of the present invention can be adopted. This screen corresponds to a setting screen after depressing the
25 cascade key 3204 on the setting screen shown in Fig. 9. The check marks are displayed on the left-edge field 3301 of a numeral 3302 being the image output device

displayed on the uppermost position in the list and a numeral 3303 being the image output device displayed on a second upper position in the list. In Fig. 10, the same parts as those in Fig. 9 are added with the same
5 numerals respectively.

[0082]

When the cascade key 3204 is depressed or touched, the image output devices indicated by the numerals 3302 and 3303 are selected as default image output devices
10 in case of performing the cascade copying.

[0083]

Then, when the cascade key 3204 is once depressed, it is shifted to a setting mode of selecting the image output device used for the cascade copying, and the own
15 device being the image output device of which name is displayed on the uppermost position in the list and the other optional one image output device can be selected.

[0084]

In order to indicate a setting mode of setting the
20 image output device used for the cascade copying, as to the image output devices having no check mark, icons are to be displayed as shown in the field 3301.

[0085]

Fig. 11 is a view showing the operation setting screen
25 (output device selection window) of the image formation system to which the image input/output control apparatus of the present invention can be adopted. This screen

corresponds to a setting screen after selectively depressing or touching an icon of the image output device displayed on fourth upper position in the list on the setting screen shown in Fig. 10, and the check marks
5 are displayed on the left-edge field 3301 of the image output devices indicated by the numerals 3401 and 3402.

In Fig. 11, the same parts as those in Figs. 9 and 10 are added with the same numerals respectively.

[0086]

10 In a case where the output paper of which size is common to the image output devices indicated by the numerals 3401 and 3402 do not exist, when the done key 3205 is depressed or touched, a warning display screen shown in Fig. 12 explained later is displayed.

15 [0087]

Fig. 12 is a view showing the warning display screen (warning window) of the image formation system to which the image input/output control apparatus of the present invention can be adopted. This screen corresponds to
20 a screen after depressing or touching an icon of the image output device displayed on a fourth upper position in the list on the setting screen shown in Fig. 11, and the check marks are displayed on the left-edge field 3301 of the image output devices indicated by the numeral
25 3401 and 3402.

[0088]

On this screen, a warning window 3501 is displayed

superimposed on an image output device selection window.

Numeral 3502 denotes a warning message which notifies that the output paper of which size common to the selected image output devices do not exist to the operator and
5 recommends a reset.

[0089]

Numeral 3503 denotes an OK key. By depressing or touching this key, the warning window 3501 is closed to return to the setting screen shown in Fig. 11, and
10 a reset (reselection of the output device) can be performed.

[0090]

As above, as shown in Figs. 8 to 12, the operation unit 2012 is the interactive operation setting means which has the display device (LCD unit 2013) for displaying
15 image formation function and at least one or more depression input device (touch panel 2019 or various keys 2014 to 2017).

[0091]

Hereinafter, a screen change processing operation
20 of the operation setting screens shown in Figs. 8 to 12 will be explained with reference to flow charts shown in Figs. 13 to 15.

[0092]

Figs. 13 to 15 are flow charts showing one example
25 of second control processing executed in the image formation system to which the image input/output control apparatus of the present invention can be adopted. The

CPU 2001 performs the processing on the basis of the programs stored in the ROM 2003 or another storage medium (not shown) corresponding to one example of a screen change processing procedure of the operation setting
5 screen. Reference symbols S201 to S217 respectively indicate steps.

At first, in the step S201, it is judged whether or not an input event is the depressing or touching of the details key ("Details" button) 3203. When it is judged
10 that the input event is the depressing or touching of the details key ("Details" button) 3203, in the step S206, a window (not shown) for displaying detailed information of the image output device being currently selected is created and displayed, and processing of
15 the callback function is terminated. On the other hand, in the step S201, when it is judged that the input event is not the depressing or touching of the details key ("Details" button) 3203, it is judged whether or not the input event is the depressing or touching of the
20 cascade key ("Cascade" button) 3204 in the step S202.

When it is judged that the input event is the depressing or touching of the cascade key ("Cascade" button) 3204, in the step S207, the check marks are displayed on the left-edge field 3301 of the local image output device
25 and the one remote image output device in the image output device list 3201, and the processing of the callback function is terminated.

On the other hand, in the step S202, when it is judged that the input event is not the depressing or touching of the cascade key ("Cascade" button) 3204, it is judged whether or not the input event is the depressing or touching
5 of the scroll key (scroll button) 3202 in the step S203.

When it is judged that the input event is the depressing or touching of the scroll key (scroll button) 3202, in the step S208, the image output device list 3201 is page scrolled and displayed to update a page number currently
10 displayed, and the processing of the callback function is terminated.

[0093]

On the other hand, in the step S203, when it is judged that the input event is not the depressing or touching
15 of the scroll key (scroll button) 3202, it is judged whether or not the input event is the depressing or touching of an item in the image output device list 3201 in the step S204. When it is judged that the input event is the depressing or touching of the item in the image output
20 device list 3201, in the step S209, a background of the depressed or touched list item is light blue displayed (so called a reversely display), and the flow advances to the step S210.

[0094]

25 Next, in the step S210, it is judged whether or not cascade setting is in a possible state. When it is judged that the cascade setting is not in the possible state

(in the impossible state), the processing of the callback function is terminated as it is.

[0095]

On the other hand, in the step S210, when it is judged
5 that the cascade setting is in the possible state, it
is judged whether or not the depressed or touched item
is the remote image output device in the step S211. When
it is judged that the depressed or touched item is not
the remote image output device, the processing of the
10 callback function is terminated as it is.

[0096]

On the other hand, in the step S211, when it is judged
that the depressed or touched item is the remote image
output device, a check mark display is changed to be
15 displayed on the depressed list item in the step S212,
and the processing of the callback function is terminated.

[0097]

On the other hand, in the step S204, when it is judged
that the depressed or touched item is not the remote
20 image output device, it is judged whether or not the
input event is the depressing or touching of the done
key ("Done" button) 3205 in the step S205. When it is
judged that the depressed or touched input event is not
the depressing or touching of the done key ("Done" button)
25 3205, the processing of the callback function is terminated
as it is.

[0098]

On the other hand, in the step S205, when it is judged that the depressed or touched input event is depressing or touching of the done key ("Done" button) 3205, it is judged whether or not the cascade setting is in the possible state in the step S213. In the step S213, when it is judged that the cascade setting is in the possible state, it is judged in the step S214 whether or not the paper of which size is common to the selected local output device and remote output device exist on the basis of the output media information. In the step S215, when it is judged that the same-sized paper do not exist, a window of giving a warning that the same-sized paper does not exist in the selected local image output device and remote image output device and recommending the reselection (the warning window 3501 shown in Fig. 12) is displayed in the step S214, and the processing of the callback function is terminated. At this time, it may be structured that the selection of the plural image output devices for performing the cascade copying selected by depressing or touching the item in the image output device list 3201 is canceled.

[0099]

On the other hand, in the step S215, it is judged that the same-sized papers exist, a window for setting the image output device (the output device selection window shown in Figs. 9 and 11) is closed in the step S217, and the processing of the callback function is

terminated. It should be noted that when the callback function is terminated, the same-sized output media which are commonly held by the plural image output devices for performing the cascade copying may be displayed.

5 [0100]

On the other hand, in the step S213, when it is also judged that the cascade setting is not in the possible state (impossible state of the cascade connection), the window for setting the image output device (the output device selection window shown in Figs. 9 and 11) is closed in the step S217, and the processing of the callback function is terminated.

[0101]

(Second Embodiment)

15 In the first embodiment, the structure of displaying the window for notifying the warning (the warning window shown in Fig. 12) in case of not existing the same-sized output media when the cascade copying is performed, was explained. In the image output devices of the present
20 embodiment, the output media selection (Paper Select) key 3103 shown in Fig. 8 can set not only the size of output media but also the kind of output media (a normal sheet, a thick sheet, a thickest sheet, a thin sheet, an OHP (overhead projector) film, color sheets (red,
25 blue, yellow, black, etc.), a specific sheet, and the like). By depressing or touching the key 3103, only the output media (size and kind) capable of being commonly

outputted by the image output devices selected by
depressing or touching the image output device selection
key 3104 is displayed, and only the image output media
(size and kind) capable of being commonly outputted is
5 enabled to be set. At this time, it may be structured
that, even when there is no common output media and/or
there is no common kind of output media (a normal sheet,
a thick sheet, a thickest sheet, a thin sheet, an OHP
(overhead projector) film, color sheets (red, blue, yellow,
10 black, etc.), a specific sheet, and the like), the warning
is notified and also the selection of the plural image
output devices is canceled.

[0102]

As above, if it is possible to confirm that the output
15 is impossible at the time of selecting the cascade image
output device, it is unnecessary to force the operator
to perform the needless operation that the relevant
operator first confirms that the selection of the output
media is impossible after performing various settings,
20 whereby operability can be improved.

[0103]

Hereinafter, the structure of a data processing
program which can be read by the image formation device
according to the present invention will be explained
25 with reference to a memory map shown in Fig. 16.

[0104]

Fig. 16 is a view for explaining the memory map of

a storage medium for storing various data processing programs which can be read by the image formation system to which the image input/output control device according to the present invention is applicable.

5 [0105]

Although it is not shown in Fig. 16, a case that information for managing program groups to be stored in a storage medium (not shown) such as version information, creators or the like is also stored, and information
10 which depends on an OS (Operating System) or the like at a side of reading the programs such as icons or the like for discriminatingly displaying the programs is also stored, is sometimes recognized.

[0106]

15 Furthermore, data depending on various programs is also managed based on the above-described directory. When a program or data to be installed is compressed, a case that an expanding program is also stored is sometimes recognized.

20 [0107]

The functions shown in the task structural view in Figs. 6, 7 and 13 to 15 according to the present embodiments may be performed by a host computer based on programs installed from an external. In this case, the present
25 invention is also applicable to a case that information groups including programs are supplied to the output devices by a storage medium such as a CD-ROM, a flash

memory, an FD (floppy disk) or the like or from an external storage medium through a network.

[0108]

As above, it is needless to say that an object of
5 the present invention can be achieved in a case where
a storage medium storing the program codes of software
for realizing the functions of the above-described
embodiments is supplied to a system or an apparatus and
then a computer (or CPU or MPU) in the system or the
10 apparatus reads and executes the program codes stored
in the storage medium.

[0109]

In this case, the program codes themselves read from
the storage medium realize new functions of the present
15 invention, and the storage medium storing such the program
codes constitute the present invention.

[0110]

The storage medium for supplying the program codes
can be, for example, a floppy disk, a hard disk, an optical
20 disk, a magnetooptical disk, a CD-ROM, a CD-R, a DVD-ROM,
a magnetic tape, a non-volatile memory card, a ROM, an
EEPROM, a silicone disk, or the like.

[0111]

It is needless to say that the present invention
25 also includes not only the case where the functions of
the above-described embodiments are realized by the
execution of the program codes read by the computer,

but also a case where an OS (operating system) or the like functioning on the computer executes all the process or a part thereof according to the instructions of the program codes, thereby realizing the functions of the
5 embodiments.

[0112]

Further, it is needless to say that the present invention includes a case where the program codes read from the storage medium are once stored in a memory provided
10 in a function expansion board inserted in the computer or a function expansion unit connected to the computer, and a CPU or the like provided in the function expansion board or the function expansion unit executes all the process or a part thereof according to the instructions
15 of such the program codes, thereby realizing the functions of the embodiments.

[0113]

The present invention is applicable to a system composed of plural equipments or to an apparatus including
20 a single equipment. It is needless to say that the present invention is applicable to a case where the object is achieved by supplying the programs to the system or the apparatus. In this case, the system or the apparatus can accept an effect of the present invention by reading
25 the storage medium storing the programs represented by software for achieving the object of the present invention for the system or the apparatus.

[0114]

Further, the system or the apparatus can accept an effect of the present invention by downloading the programs represented by the software for achieving the object
5 of the present invention from a data base on a network according to a communication program and reading the programs.

[0115]

[Effect of the Invention]

10 As explained above, according to the first invention, the image output device to which the image is output from the cascade image output means of outputting the image read by the image input device to the plural image output devices through the communication medium so as
15 to form the image on the output media by the image formation function set by the operation setting means is selected from the plural image output devices by the cascade image output device selection means, and the control means displays on the display device whether or not the plural
20 image output devices selected by the cascade image output device selection means hold the output media of the same size. Thus, it is possible to confirm that the output is impossible at the time of selecting the cascade image output device because there is no output media of the
25 same size, whereby it is possible to prevent to force the operator to perform the needless operation that the relevant operator first confirms that the selection of

the output media is impossible after performing various settings.

[0116]

According to the second invention, the control means
5 invalidates the selection by the cascade image output
device selection means, if the plural image output devices
selected by the cascade image output device selection
means does not hold the output media of the same size.

Thus, it is possible to surely prevent that the output
10 to the selected image output device is impossible at
the time of selecting the cascade image output device
because there is no output media of the same size.

[0117]

According to the third invention, the control means
15 displays the warning message on the display apparatus
and invalidates the selection by the cascade image output
device selection means, if the plural image output devices
selected by the cascade image output device selection
means does not hold the output media of the same size.

20 Thus, it is possible to surely prevent that the output
to the selected image output device is impossible at
the time of selecting the cascade image output device
because there is no output media of the same size, and
it is further possible to urge the resetting.

25 [0118]

According to the fourth invention, the control means
display controls on the display apparatus whether or

not the plural image output devices selected by the cascade
image output device selection means hold the output media
of the same size and the same kind. Thus, it is possible
to confirm that the output to the selected image output
5 device is impossible at the time of selecting the cascade
image output device because there is no output media
of the same size and the same kind, whereby it is possible
to prevent to force the operator to perform the needless
operation that the relevant operator first confirms that
10 the selection of the output media is impossible after
performing various settings.

[0119]

According to the fifth invention, the control means
invalidates the selection by the cascade image output
15 device selection means, if the plural image output devices
selected by the cascade image output device selection
means does not hold the output media of the same size
and the same kind. Thus, it is possible to surely prevent
that the output to the selected image output device is
20 impossible at the time of selecting the cascade image
output device because there is no output media of the
same size and the same kind.

[0120]

According to the sixth invention, the control means
25 displays a warning message on the display apparatus and
invalidates the selection by the cascade image output
device selection means, if the plural image output devices

selected by the cascade image output device selection means does not hold the output media of the same size and the same kind. Thus, it is possible to surely prevent that the output to the selected image output device is impossible at the time of selecting the cascade image output device because there is no output media of the same size, and it is further possible to urge the resetting. [0121]

According to the seventh and ninth inventions, the image output device to which the image is output from the cascade image output means of outputting the image read by the image input device to the plural image output devices through the communication medium, and it displays on the setting unit for setting the image formation function whether or not the selected plural image output devices hold the same output media. Thus, it is possible to confirm that the output to the selected image output device is impossible at the time of selecting the cascade image output device because there is no same output media, whereby it is possible to prevent to force the operator to perform the needless operation that the relevant operator first confirms that the selection of the output media is impossible after performing various settings. [0122]

According to the eighth and tens inventions, the same output media are the output media of the same size and the same kind. Thus, it is possible to confirm that

the output to the selected image output device is impossible at the time of selecting the cascade image output device because there is no output media of the same size and the same kind, whereby it is possible to prevent to force
5 the operator to perform the needless operation that the relevant operator first confirms that the selection of the output media is impossible after performing various settings.

[0123]

10 Accordingly, it is possible to prevent the unnecessary operation that the operator again sets, after setting the various image formation functions, the various image formation functions only after recognizing the selection of the output media is impossible.

15

[Brief Description of the Drawings]

Fig. 1 is a block diagram for explaining an entire structure of an image formation system including image output devices to which image output control apparatuses
20 indicating a first embodiment of the present invention can be adopted;

Fig. 2 is a block diagram for explaining the structure of the image output device shown in Fig. 1;

Fig. 3 is a view for explaining a scanner unit and
25 a printer unit shown in Fig 1;

Fig. 4 is a plane view for explaining the structure of an operation unit shown in Fig. 1;

Fig. 5 is a block diagram for explaining the structure of an operation unit of the image output device to which the image output control apparatus indicating embodiments of the present invention can be adopted;

5 Fig. 6 is a task structural view of an operation display system showing one example of the software structure regarding an operation display of the image output device to which the image output control apparatus indicating one embodiment of the present invention can
10 be adopted;

Fig. 7 is a flow chart showing one example of first control processing executed in the image output device to which the image output control apparatus of the present invention can be adopted;

15 Fig. 8 is a view showing an operation setting screen of the image output device to which the image output control apparatus of the present invention can be adopted;

Fig. 9 is a view showing an operation setting screen (output device selection window) of the image output
20 device to which the image output control apparatus of the present invention can be adopted;

Fig. 10 is a view showing the operation setting screen (output device selection window) of the image output device to which the image output control apparatus of
25 the present invention can be adopted;

Fig. 11 is a view showing the operation setting screen (output device selection window) of the image output

device to which the image output control apparatus of the present invention can be adopted;

Fig. 12 is a view showing a warning display screen (warning window) of the image output device to which
5 the image output control apparatus of the present invention can be adopted;

Fig. 13 is a flow chart showing one example of second control processing executed in the image output device to which the image output control apparatus of the present
10 invention can be adopted;

Fig. 14 is a flow chart showing one example of the second control processing executed in the image output device to which the image output control apparatus of the present invention can be adopted;

15 Fig. 15 is a flow chart showing one example of the second control processing executed in the image output device to which the image output control apparatus of the present invention can be adopted; and

Fig. 16 is a view for explaining a memory map of
20 a storage medium which stores various data processing programs which can be read out by the image output device or the PC to which the present invention is applicable.

[Description of Reference Numerals of Symbols]

25 2001 ... CPU
 2002 ... RAM
 2003 ... ROM

2004 ... HDD

2012 ... operation unit

2013 ... LCD

2019 ... touch panel

【書類名】 図面

【図 1】

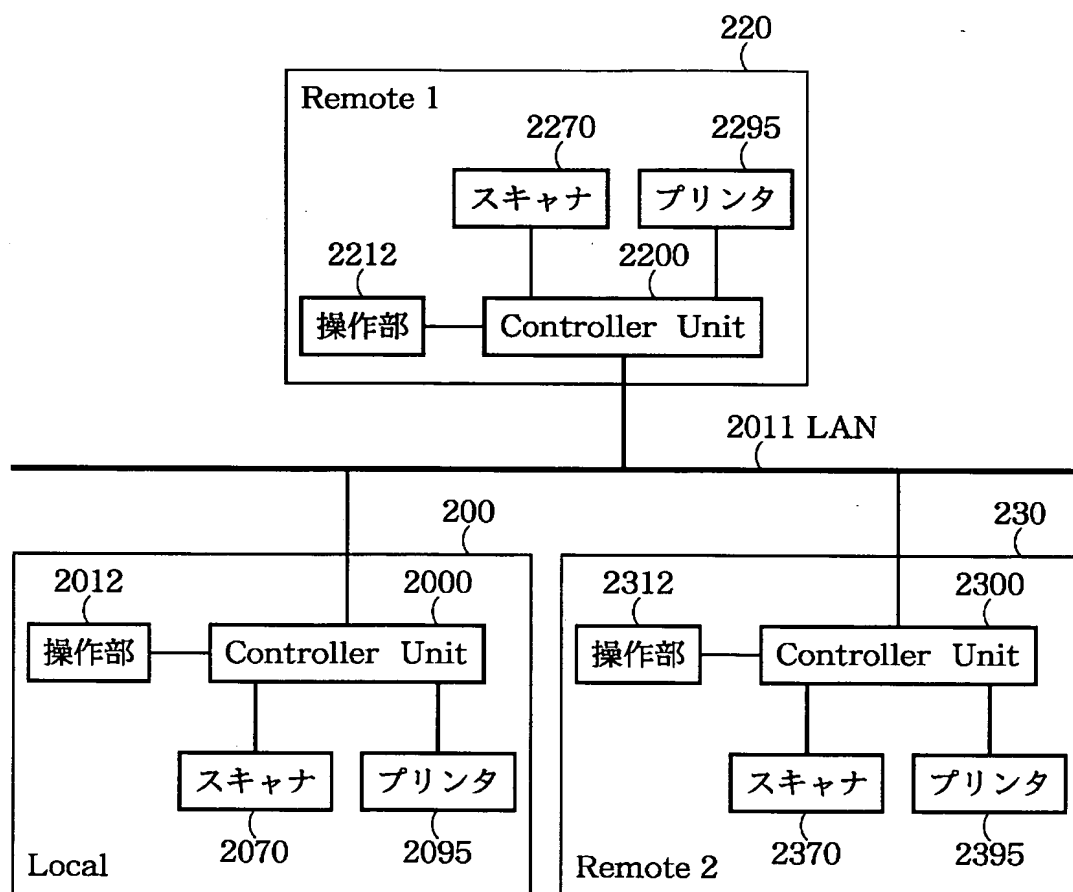
[Document Title] Drawings

[Fig. 1]

2212, 2012, 2312 ... operation unit

2207, 2070, 2370 ... scanner

2295, 2095, 2395 ... printer



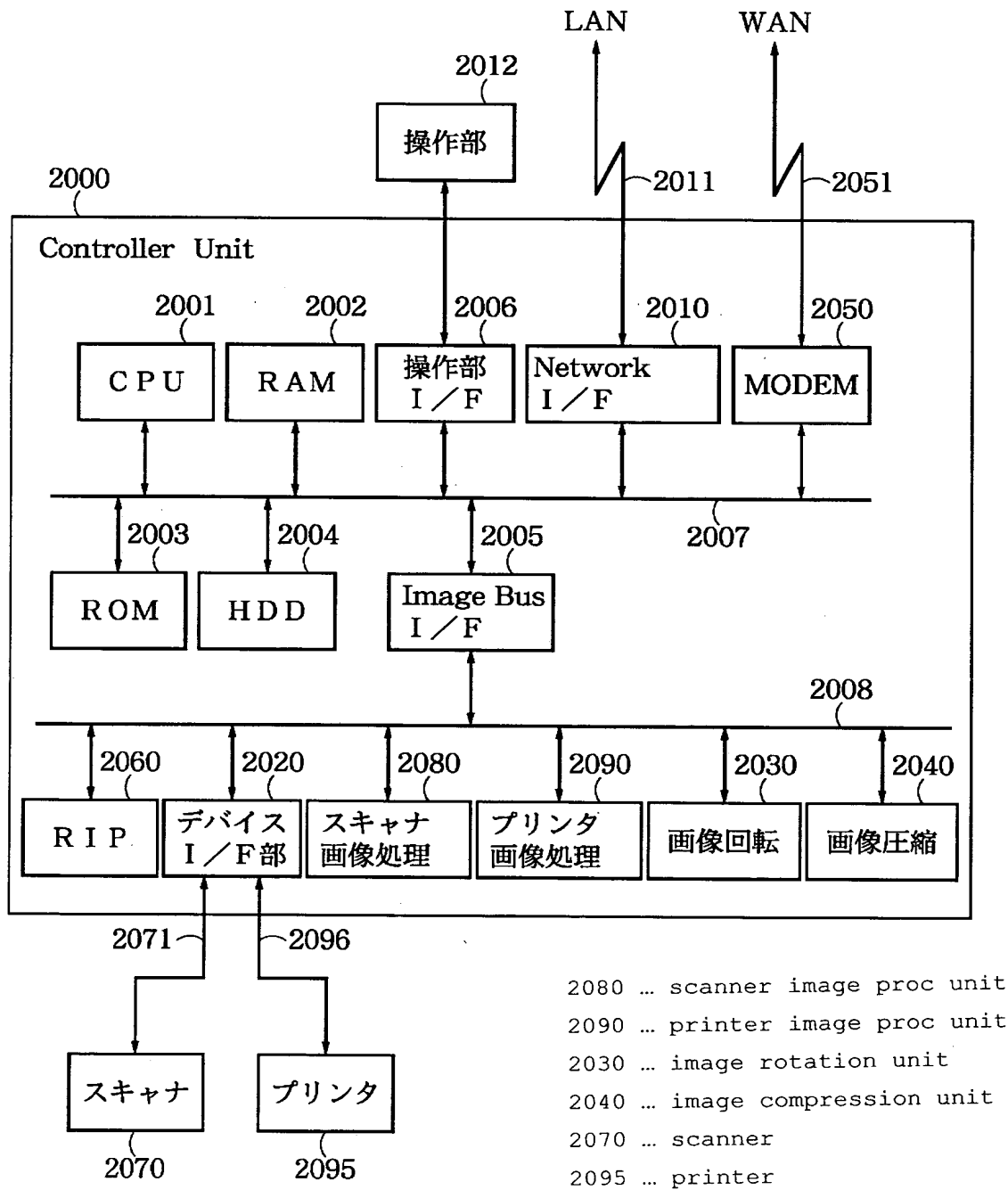
【図2】

[Fig. 2]

2012 ... operation unit

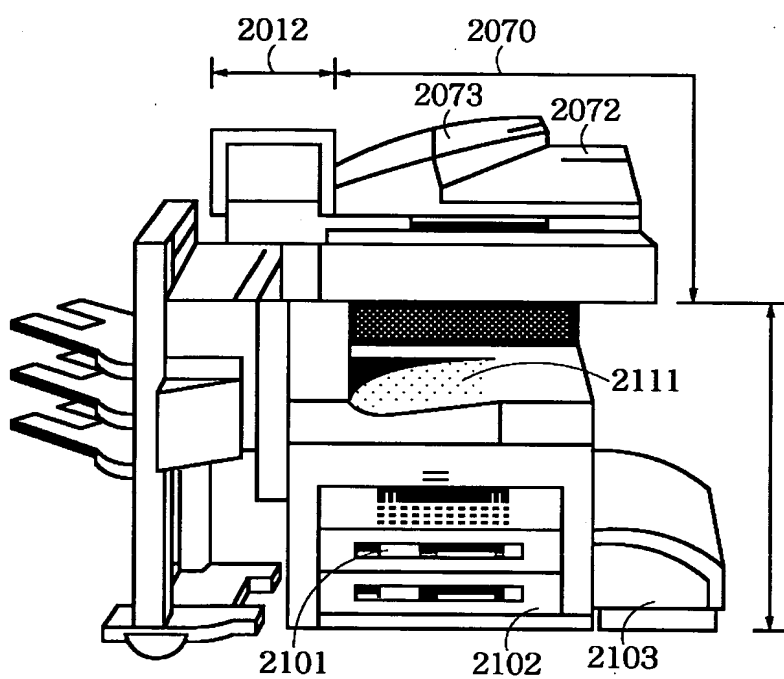
2006 ... operation unit I/F

2020 ... device I/F unit



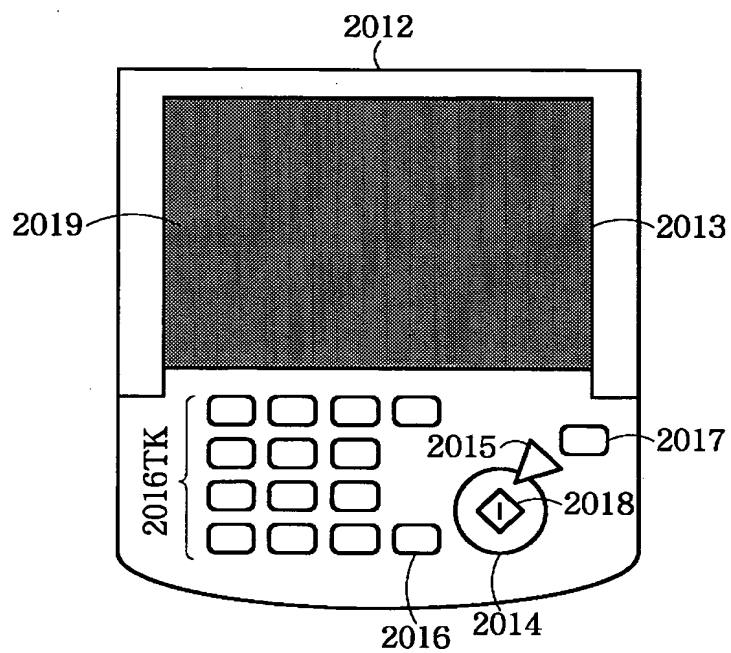
【図3】

[Fig. 3]



【図 4】

[Fig. 4]



【図5】

[Fig. 5]

2012 ... operation unit

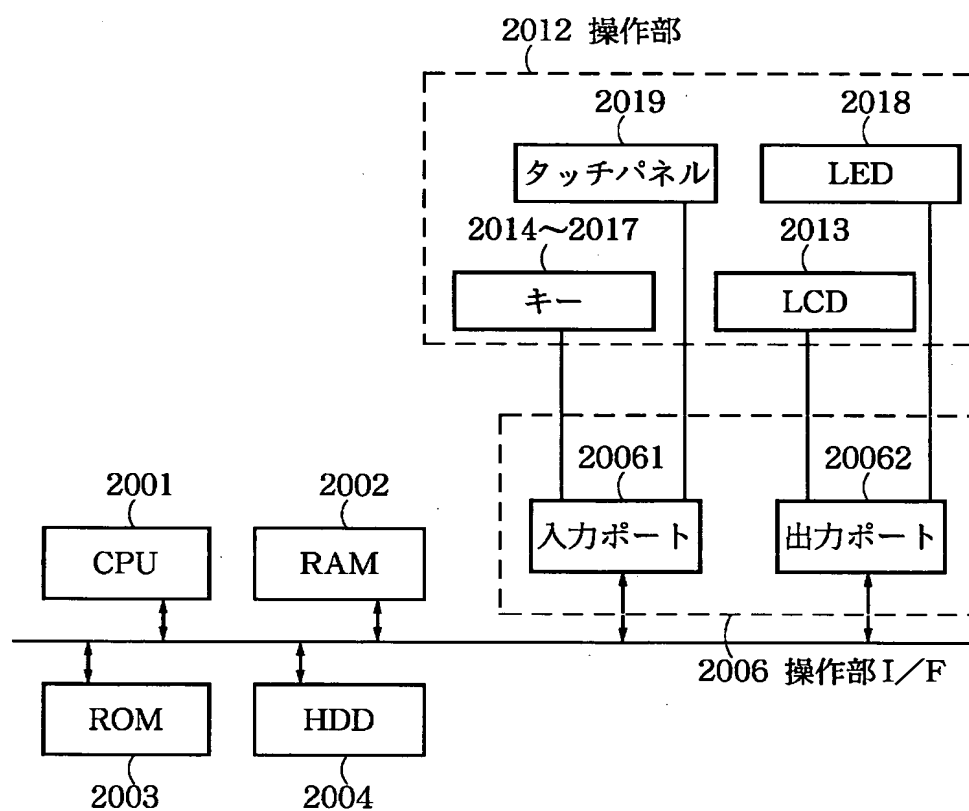
2014 - 2017 ... keys

20061 ... input port

2019 ... touch panel

2006 ... operation unit I/F

20062 ... output port



【図6】

[Fig. 6]

2014 - 2017, 2019 ... touch panel & hard keys

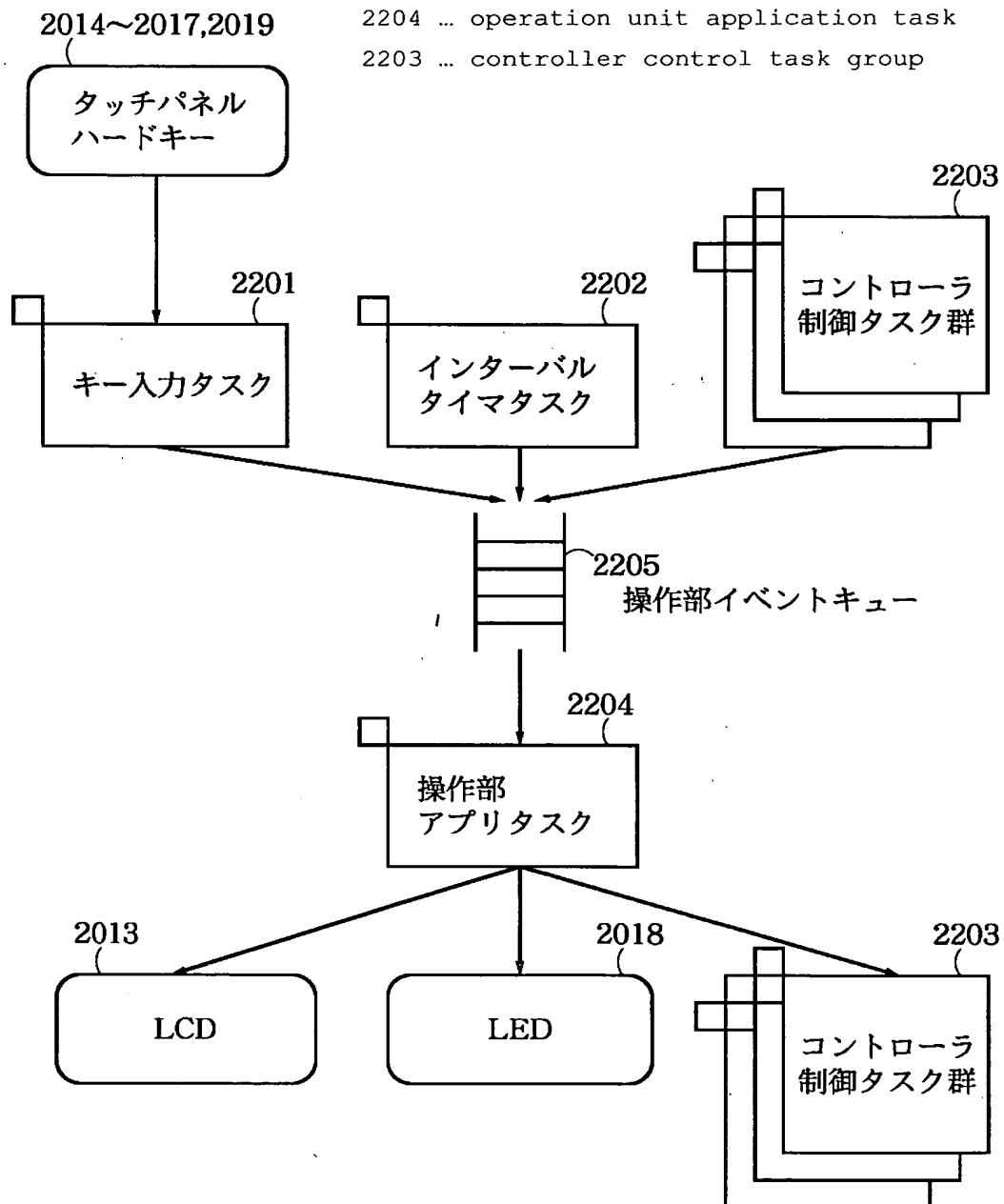
2201 ... key input task

2202 ... interval timer task

2203 ... controller control task group

2204 ... operation unit application task

2203 ... controller control task group

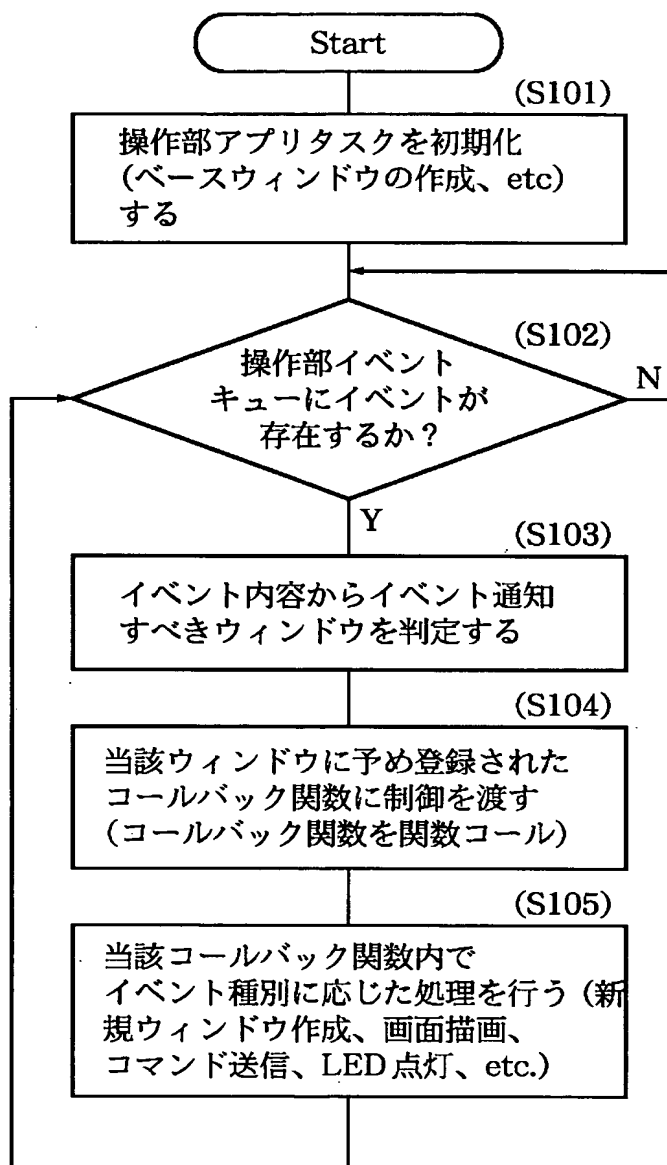


【図7】 [Fig. 7]

S101 ... initialize operation unit application task (create base window, etc.)

S102 ... event exist in operation unit event queue?

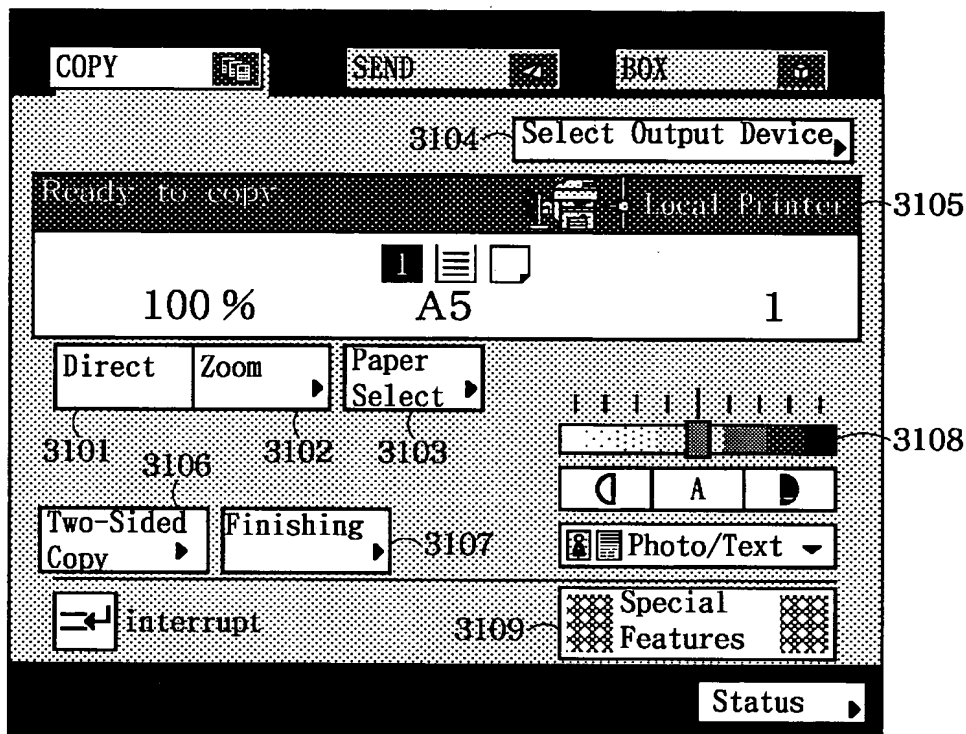
S103 ... discriminate window to which event should be notified, from event content



S104 ... give control to callback function previously registered in the window (perform function call to callback function)

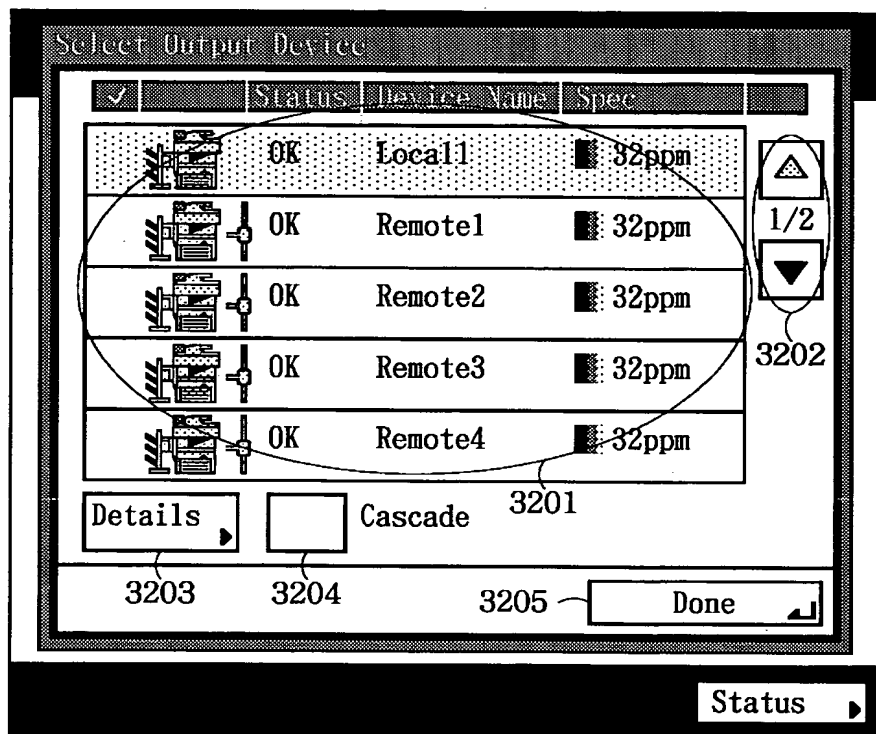
S105 ... perform proc according to kind of even in the callback function (creation of new window, drawing on screen, transmission of command, lighting of led, etc.)

【図8】 [Fig. 8]



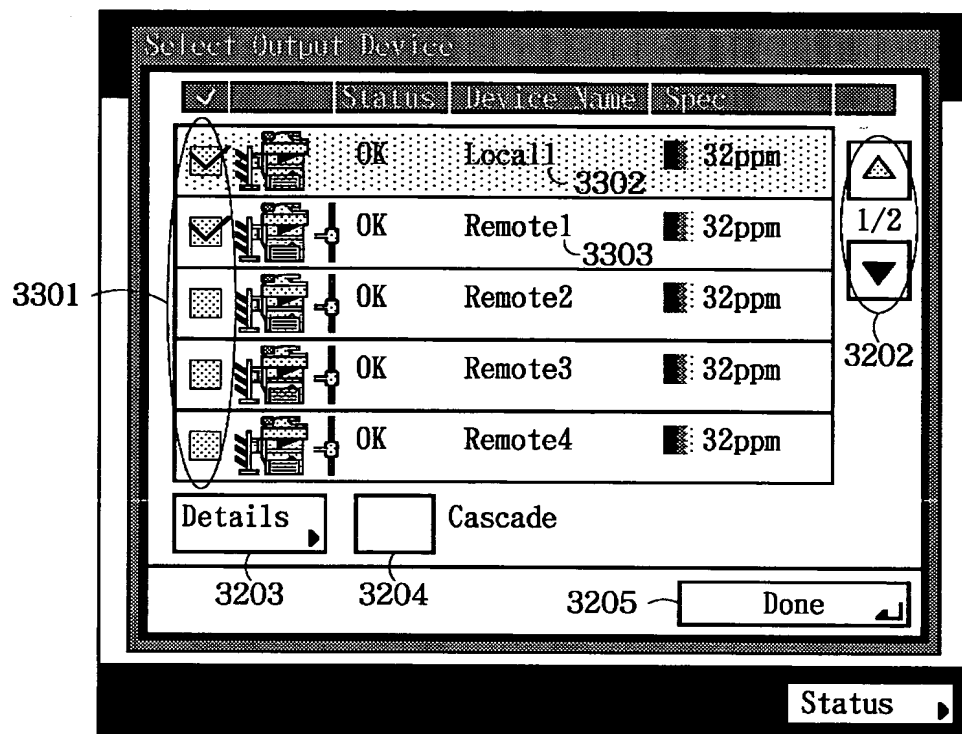
【図9】

[Fig. 9]



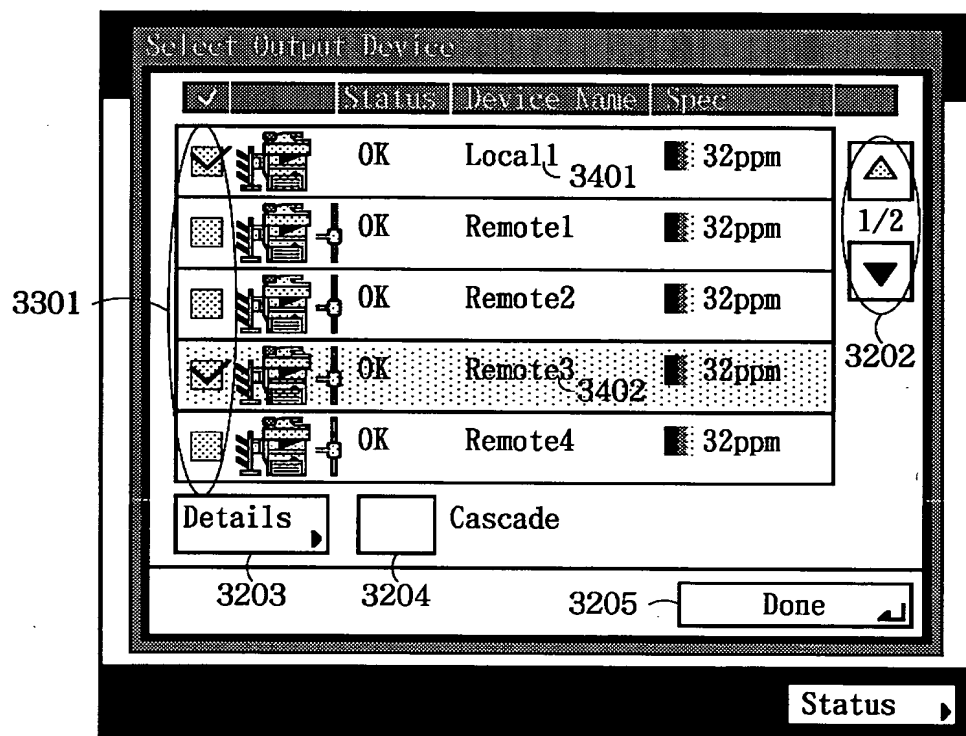
【図10】

[Fig. 10]



【図11】

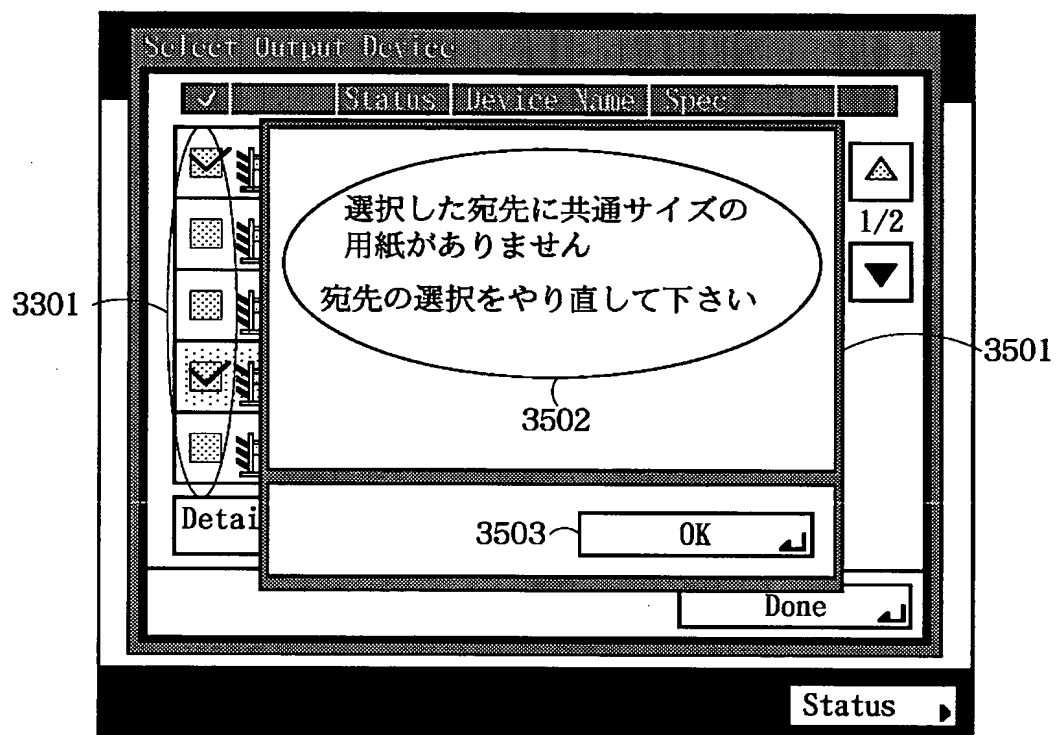
[Fig. 11]



[Fig. 12]

```
3502 ... there is no common-sized media on selected address
```

```
reselect address
```



【図13】

[Fig. 13]

S201 ... "Details" button depresses?

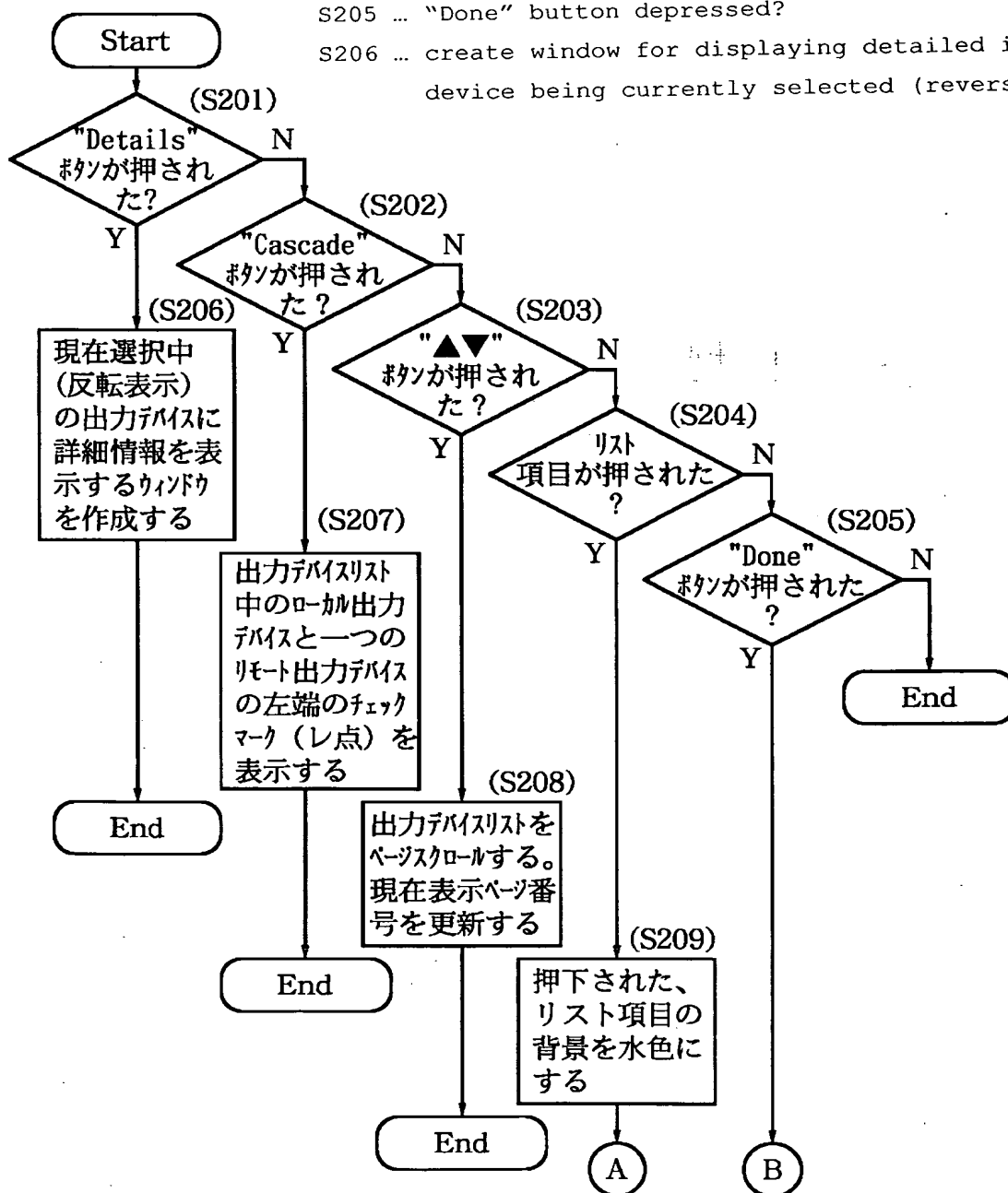
S202 ... "Cascade" button depressed?

S203 ... "▲▼" button depressed?

S204 ... list item depressed?

S205 ... "Done" button depressed?

S206 ... create window for displaying detailed information of output device being currently selected (reversedly displayed)



S207 ... display left-edge check marks (✓) of local output device and one remote output device in output device list

S208 ... perform page scroll of output device list, and update current-display page number

S209 ... make background of depressed list item light blue

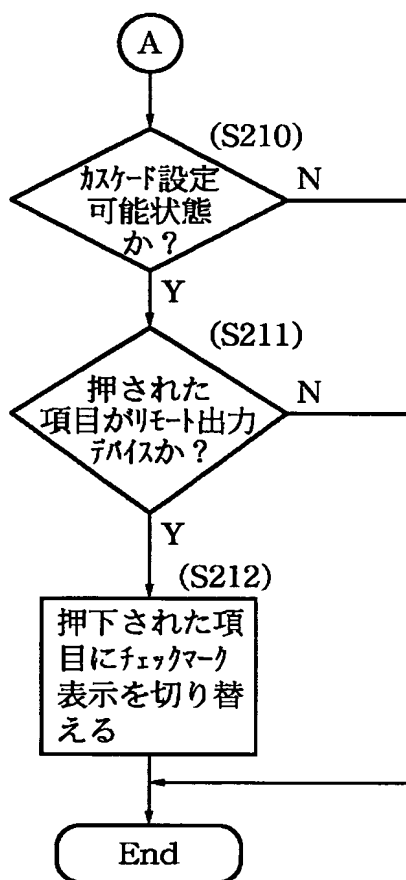
【図14】

[Fig. 14]

S210 ... in the state that cascade setting is possible/

S211 ... depressed item indicate remote output device?

S212 ... change check mark display to depressed item



【図15】

[Fig. 15]

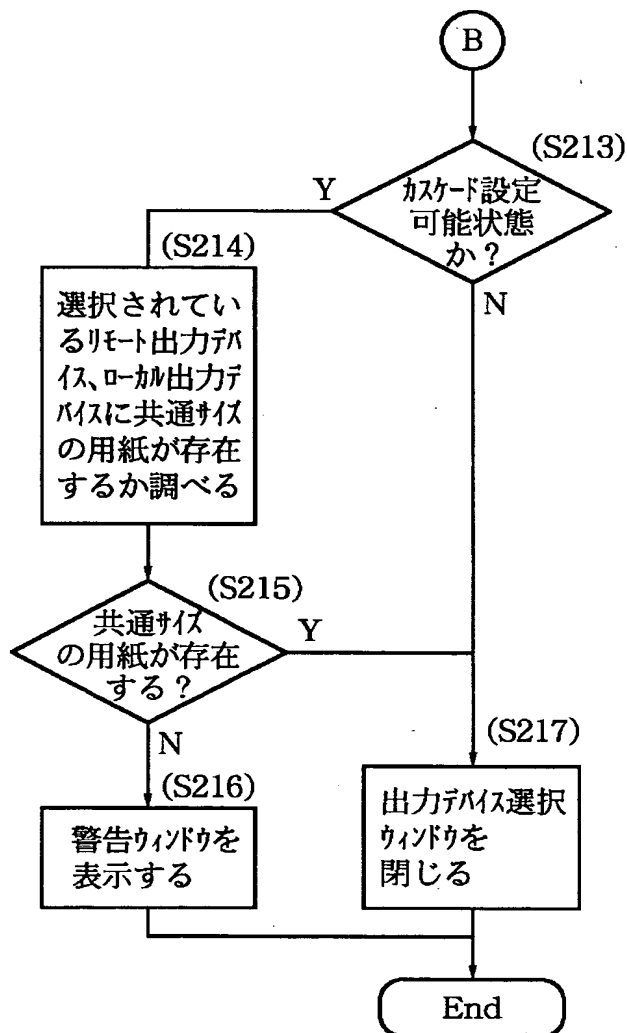
S213 ... in the state that cascade setting is possible?

S214 ... obtain output media information of selected remote and
local output devices

S215 ... same-sized media exist?

S216 ... display warning window

S217 ... close output device window



[Fig. 16]

【図16】

recording medium such as FD/CD-ROM
 first data processing program
 program code group corresponding to steps of flow chart shown in Fig. 7
 second data processing program
 program code group corresponding to steps of flow charts shown in Figs. 13-15

FD/CD-ROM等の記憶媒体

ディレクトリ情報 <i>directory information</i>
第1のデータ処理プログラム 図7に示すフローチャートのステップに対応するプログラムコード群
第2のデータ処理プログラム 図13～図15に示すフローチャートのステップに対応するプログラムコード群
第3のデータ処理プログラム 図6に示すタスク構成図の各タスクに対応する制御プログラムコード群

記憶媒体のメモリマップ

third data processing program
 control program code group corresponding to respective tasks shown in Fig. 6
 memory map of storage medium

[Document Title] Abstract

[Abstract]

[Problem] It aims to prevent the unnecessary operation
that the operator again sets, after setting the various
5 image formation functions, the various image formation
functions only after recognizing the selection of the
output media is impossible, and to improve the operability.

[Means for Achieving Object] The printer to which the
image is output from the cascade image output means of
10 outputting the image read by the scanner unit 2070 to
the plural printers through the LAN 2011, and the CPU
2001 displays on the LCD in the operation unit 2012 for
setting the image formation function whether or not the
selected plural image output devices hold the same output
15 media.

[Selective Drawing] Fig. 2

2000-018337

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